

**RECEIVED
CENTRAL FAX CENTER****JAN 25 2007**

Serial No.: 10/685,652

Art Unit: 1732

REMARKS***Disposition of Claims***

Upon entry of the foregoing amendments, claims 1-3 and 6-7 will remain pending in the application and stand ready for further action on the merits. Claims 4-5; 8-14; and 15-22 were canceled in previous amendments. Claim 1 has been amended to clarify that the first and second wax-like polymerizable dental materials optionally contain reinforcing filler material. This amendment is fully supported by the Specification, particularly at page 2 (paragraph 3). No new matter has been added to the Specification.

Claim Rejections under 35 U.S.C. §103

The Office Action rejects claims 1-3 and 6-7 under 35 U.S.C. § 103(a) as being unpatentable over Deguchi, U.S. Patent 6,136,886 ("Deguchi") in view of Völkel et al., U.S. Patent 6,057,383 ("Völkel") and further in view of Angeletakis, U.S. Patent 6,121,344 ("Angeletakis"). It is respectfully submitted that the presently claimed invention, as recited in amended claims 1-3 and 6-7, is not prima facie obvious over the combination of Deguchi, Völkel, and Angeletakis for the reasons discussed below.

Applicants first agree with the Examiner that Deguchi generally teaches a method of making a dental prosthetic material by shaping first and second polymerizable materials. In Deguchi, the method involves molding a first colored resin to produce the enamel portion of an artificial tooth followed by molding a second colored resin for producing the dentin portion. The different tooth portions are completely polymerized in a final molding step (col. 2, lines 1-23). The Examiner, however, recognizes that Deguchi does not disclose polymerizable wax-like dental materials.

So the Examiner turns to Völkel, pointing out that this reference discloses making dental materials based on polymerizable waxes. In Völkel, multiple starting ingredients are mixed together to make the dental material. The ingredients include 0 to 70 wt.% of at least one polymerizable monomer and/or oligomer; 0.1 to 5 wt.% of at least one polymerization initiator; 0 to 60 wt.% of one or more fillers; and at least 20 wt.% of a wax-like polymerizable substance.

Serial No.: 10/685,652
Art Unit: 1732

Völkel discloses that the dental materials can be photopolymerized and used to make temporary and permanent prostheses as well as temporary crowns, bridges, and inlays.

Although Völkel discloses wax-like polymerizable substances which can be molded and shaped in the mouth, the Examiner recognizes that these materials are not high strength dental polymeric materials as recited in amended claim 1 and defined by Applicants in the subject application. Applicants' materials are required to have a flexural modulus of at least 250,000 psi and flexural strength of at least 5,000 psi as noted at page 2 (paragraph 3) of the Specification. By contrast, test results show that materials described in the Völkel patent only have a flexural modulus of 207,900 psi and flexural strength of 2,897 psi as discussed in a Rule 132 Declaration previously filed by Applicants. In the current office action (page 5), the Examiner acknowledges that the Rule 132 Declaration is sufficient to overcome the prior rejection of the claims in view of the references, Deguchi and Völkel.

But, the Examiner goes on to point out that dental materials having a flexural modulus of at least 250,000 psi and flexural strength of at least 5,000 psi have been made in the past according to the disclosure in Angeletakis. Turning to Table 3 in Angeletakis, the Examiner notes that materials having a flexural modulus in the range of 1,341,309 to 1,589,613 psi and a flexural strength in the range of 16,099 to 19,725 psi are disclosed. The materials described in Angeletakis have mineral filler particles dispersed in a resin matrix. In Angeletakis, the strength of the material is due to these structural fillers.

The present invention provides a resin-containing dental composite including a structural filler of ground particles having an average particle size of between about 0.05 μm and about 0.5 μm that has the high strength required for load bearing restorations. . . .
(col. 3, lines 50-54.)

Suitable structural fillers are described by Angeletakis as including barium, magnesium, aluminosilicate glass, silica, barium oxide, quartz, alumina, and other inorganic oxide particles (col. 5, lines 28-32). The Examiner takes the position that it would have been obvious to add the fillers described in Angeletakis to the composition described in Völkel, and the resulting material would have sufficiently high strength as claimed by Applicants. The Examiner appears to

Serial No.: 10/685,652
Art Unit: 1732

suggest that through the use of structural filler materials, as disclosed in Angeletakis, the composite material of the present invention achieves its high strength.

But, Applicants respectfully submit that this is not technically accurate. The strength of Applicants' material is not due to reinforcing particulate material or other strengthening agents. Instead, the polymerizable resin matrix, by and in itself, provides Applicants' material with its high strength:

Optionally, high strength dental polymeric material includes reinforcing filler. However, the polymeric matrix alone (without any reinforcing filler) has a flexural modulus of at least 250,000 psi and a flexural strength of at least 5,000 psi. (Page 2, Paragraph 3).

That is, the polymerizable resin of this invention has high strength properties even when it is substantially free of filler materials. As set forth above, claims 1-3 and 6-7 have been amended to recite that the reinforcing filler material is optional. Fillers are not needed to provide the polymerizable resin with high strength properties. While fillers can be added to the resin, this is a discretionary step. A person making the composition described by Applicants may or may not decide to add filler material at their choosing. In Applicants' invention, the wax-like polymerizable resin provides the dental device with high strength. Thus, even if the disclosures in Deguchi, Völkel, and Angeletakis were combined, it is submitted that the presently claimed invention would not be obvious. There is no disclosure or suggestion in Deguchi, Völkel, or Angeletakis, taken alone or in combination, for a dental device made from a polymerizable resin that, by and in itself, has wax-like and high-strength properties. In view of the foregoing, it is respectfully requested that the rejection of claims 1-3 and 6-7 under 35 U.S.C. § 103(a) be withdrawn.

Conclusion

In summary, Applicants submit that claims 1-3 and 6-7 as amended are patentable and each of the Examiner's rejections and objections has been overcome. Accordingly, Applicants request favorable consideration and allowance of amended claims 1-3 and 6-7.

Serial No.: 10/685,652
Art Unit: 1732

The Commissioner is hereby authorized to charge any additional fee required in connection with the filing of this paper or credit any overpayment to Deposit Account No. 04-0780. Should there be any outstanding matter that needs to be resolved in the present application; the Examiner is invited to contact the undersigned at the telephone number provided below.

Respectfully submitted,

DENTSPLY International Inc.

By: Daniel W. Sullivan
Daniel W. Sullivan
Reg. No.: 34,937
Tel.: (717) 849-4472
Fax: (717) 849-4360

Dated: JANUARY 25th, 2007